

A KEY TO THE GENUS *TACHYTES* IN AMERICA NORTH OF
MEXICO WITH DESCRIPTIONS OF THREE NEW SPECIES
(HYMENOPTERA, SPHECIDAE, LARRINAE)

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Abstract.—The illustrated key and taxonomic notes include 35 species. The three new ones are *Tachytes desertus* (Texas to California and Baja California), *grisselli* (Florida), and *weneri* (Arizona and Mexico). *Tachytes rossi* Bohart (1962) is placed in synonymy with *fulviventris* Cresson.

Key Words: Hymenoptera, Sphecidae, Larrinae, *Tachytes*, species key, United States

Tachytes Panzer with a European species, *Sphex tricoloratus* Turton as generotype, is one of the larger genera in the Sphecidae. Bohart and Menke (1976) redescribed the genus, reviewed infrageneric classification emphasizing species groups, and listed 268 species from all Zoological Regions. Bohart (1979) revised the South American species, reassessed species groups, and described 31 new species. *Tachytes* now contains over 300 species worldwide.

I have made thousands of identifications of North American *Tachytes* and examined types of many species. Clearly it is time to produce an identification key for the North American fauna, although some problems remain. Females of two related forms (*bad-ius* Banks and *weneri* Bohart) as well as females of species related to *pepticus* are separated with difficulty. The key proposed here for the 35 species in our fauna should be helpful, it not the final word.

I have used species groups instead of subgenera. Banks (1942) gave new subgeneric names, but his included species for *Tachytes* Panzer, s.s. and *Tachyplena* are confusing. Based on the subgenerotypes, Banks' sub-

genera correspond to my species groups as follows:

Tachytes Panzer 1806 s.s (type *Sphex tricoloratus* Turton 1802, = *Sphex tricolor* Fabricius 1793, nec *Sphex tricolor* Schrank 1781) = *Tachyplena* Banks 1942 (type *Tachytes mandibularis* Patton = *Larra aurulentus* Fabricius) = *aurulentus* and *ermineus* groups of Bohart.

Tachynana Banks 1942 (type *Tachytes obscurus* Cresson) = *abdominalis* group of Bohart and Menke (1976).

Tachyoides Banks 1942 (type *Tachytes mergus* W. Fox) = *mergus* group of Bohart and Menke (1976) = *nitidiusculus* group of Bohart (1979).

According to a strict interpretation of the above subgenera, as indicated by their type species, my *amazonus*, *distinctus* and *pepticus* groups do not agree with any of them. The *amazonus* group as used in this paper is distinguished from the *distinctus* group of Bohart and Menke (1976) by the subequal length of F-I-II and the weltd female clypeus of the former as indicated in Bohart (1979). The *aurulentus* group of Bohart and

Menke (1976) has here been divided into *aurulentus* and *ermineus* groups depending upon basal mandible color.

NOTES RELATING TO SPECIES KEY

In females of the *pepticus* group only *sayi* and *cressoni* are readily identifiable. In the subgroup with considerable anteromedian reflective pubescence (*pepticus*, *fluviventris*, *sculleni*) only *sculleni* seems to always have T-I to III red. The dark abdomen form of *pepticus* was called *sericatus* by Cresson, as a distinct species. I consider it at most a subspecies. The dark form of *fulviventris* is *rossi* R. Bohart (new synonym). In the subgroup with little, if any, anteromedian reflective pubescence (*spatulatus*, *pennsylvanicus*, *californicus*, *nevadensis*) all except the dark abdomen *pennsylvanicus* have T-I to III red in females.

Geographical ranges indicated in the key are of some significance. I have seen *pepticus* from Illinois to Colorado and Arizona. The range of *fulviventris* extends from Illinois to southern California and Mexico. *T. pennsylvanicus* occurs mostly in eastern U.S., *sculleni* and *spatulatus* are western, both *californicus* and *nevadensis* are largely confined to their namesake States.

Technical terms used in the key and descriptions are: F-I through F-XI, flagellomeres; T-I through T-VII, terga; S-I through S-VIII, sterna; LID, least interocular distance; apicad, toward apex; basad, toward base; gonostyle, male "clasper"; dististyle, apical part of male "clasper"; off-silvery, slightly tarnished, nearly silvery.

KEY TO *TACHYTES* OF AMERICA
NORTH OF MEXICO

- 1. Hindfemur with many erect hairlike setae beneath (Figs. 2, 19), spread out over most of femoral length; male flagellomeres apically, forecoxa, and forefemur simple 2
- Hindfemur with not more than a few such erect hair-like setae beneath toward base, male characters various 14
- 2. Mandible red at or near base (or in *aurico-*

- mans* T-I to III only fasciate in male, and no apical setal tufts on male T-VI), scape usually bright orange red (*aurulentus* group) 3
- Mandible black toward base, scape not bright orange red, no apical setal tufts (*ermineus* group) 7
- 3. T-I to III with apical setal fasciae, scape nearly all black to dark red, mandible sometimes blackish toward base; e. U.S., North Carolina to Florida, Illinois to e. Texas *auricomans* Bradley
- T-I to IV with apical pale setal fasciae, scape usually bright orange red, mandible red toward base 4
- 4. Scutum apicolaterally without silvery to golden reflective pubescence, male F-II to VI somewhat swollen beneath; e. U.S. west to Arizona, New Mexico, Colorado *validus* Cresson
- Scutum apicolaterally with silvery to golden reflective pubescence (turn in several directions to catch light), male F various 5
- 5. Female pygidial plate bright silvery or very light golden, male T-VII with dense and rather short silvery setae, male flagellar articles moderately convex beneath; Arizona, New Mexico, w. Texas *exornatus* W. Fox
- Female pygidial plate dark coppery; male T-VII with off-silvery setae partly separated and not concealing integument, male F various 6
- 6. LID slightly greater than F-I length, female pygidial plate not margined, male F-II to IV slightly convex beneath (Fig. 10); U.S. west to Wyoming, Arizona *aurulentus* (Fabricius)
- LID and F-I length subequal (Fig. 1), female pygidial plate with a smoothly raised margin all around, male F-II to IV strongly convex beneath (Fig. 21); Florida *grisselli* R. Bohart
- 7. Hindtibia red 8
- Hindtibia black 11
- 8. Hindfemur all red or more than half so, scutum anteromedially with at least a sprinkling of golden reflective setae, female pygidial plate coppery, male F-II to V rather strongly convex beneath, male T-VI with or without lateral tuft 9
- Hindfemur black or more than half so, scutum anteromedially without golden reflective setae, male F-II to V various, male F-VI with lateral bristle tuft (as in Fig. 11) 10
- 9. Female propodeal dorsum with dense appressed golden setae, male T-VI without lateral setal tuft, male T-V much broader apically than T-VI basally; Maryland to Florida, west to e. Texas *praedator* W. Fox

- Female without dense appressed golden setae on propodeum except laterally; male T-VI with lateral bristle tuft (Fig. 11), male T-V not much broader apically than T-VI basally; e. U.S., Maryland to Florida, Illinois, Texas *columbiae* W. Fox
- 10. Scutum anterolaterally with a patch of reflective setae, both sexes with rather sparse hairlike setae beneath hindfemur; female with pale apical setal fasciae on T-I to IV; male with T-II to V strongly convex beneath, S-VIII weakly incised (Fig. 9); e. U.S., Massachusetts to Florida, Illinois, e. Texas *harpax* Patton
- Scutum anterolaterally without a patch of reflective hair, both sexes with abundant erect hairlike setae beneath hindfemur; female with pale apical setal fasciae on T-I to III; male with F-II to V moderately convex beneath, S-VIII semicircularly incised (Fig. 8); e. U.S. to e. Texas, Nebraska *crassus* Patton
- 11. Scutum anterolaterally without or with very little silvery reflective pubescence, female pygidial plate mostly bright silvery, dististyle broad and flat toward apex; e. U.S., North Carolina to Florida, Kansas *floridanus* Rohwer
- Scutum anterolaterally with a patch of silvery reflective pubescence, female pygidial plate not silvery, dististyle narrowed or pointed at apex 12
- 12. Female pygidial plate light golden, male hindfemur with relatively few erect hairlike setae scattered over its entire length; dististyle moderately stout, rounded toward apex; w. U.S., w. Texas to Utah, Arizona, Mexico *ermineus* Banks
- Female pygidial plate coppery to nearly black, male hindfemur with abundant erect hairlike setae beneath over its entire length, dististyle various 13
- 13. Female pygidial plate coppery in some lights, setae relatively fine; male F-IX-X somewhat broadened (Fig. 3), male S-VIII with prominent erect hairlike setae, dististyle obliquely rounded over at apex (Fig. 22); Arizona, Central America *wernerii* R. Bohart
- Female pygidial plate nearly black, slightly coppery reflections; setae relatively coarse; male F tapering evenly toward apex; male S-VIII without unusual hairlike setae, dististyle narrow, almost pointed; Texas to Arizona, Mexico *badius* Banks
- 14. Mandible red or reddish yellow toward base; male with long or short coxal projections (Fig. 17), forefemur with subbasal depression 15
- Mandible black basad, male characters various 21
- 15. Female pygidial plate with somewhat separated, silvery setae; male forecoxa with projection quite short, male LID more than 2 × F-I length; small species, 7-8 mm long; New Jersey to Florida, west to Oklahoma, Texas, and Arizona, Central America (*mergus* group) *mergus* W. Fox
- Female pygidial plate with close coppery to dark brown setae, male forecoxa with stout to slender but longer projections, mostly larger species with greater LID 16
- 16. Female clypeus with transverse subapical projecting ridge, male F-I and F-II length subequal (*amazonus* group) 17
- Female clypeus gently convex, male F-I at least 10 percent longer than F-II (*distinctus* group) 18
- 17. Female hindfemur black, male S-III to V with median hairlike tufts, male clypeal lip protruding and subapically polished; widespread in New World *amazonus* F. Smith
- Female hindfemur red, male sterna without hairlike tufts, male clypeal lip not protruding or polished, gonostyle broad and petiolate (Fig. 18); Texas to California, Baja California *desertus* R. Bohart
- 18. Scutum anterolaterally without a patch of silvery or golden pubescence, female with well-defined fasciae on T-I-II only, male with such bands on T-I to III; e. U.S. to Texas and Kansas, Central America *guatemalensis* Cameron
- Scutum anterolaterally with a patch of silvery or golden pubescence, both sexes with 3 or 5 well-defined pale tergal fasciae 19
- 19. Hindtibia all or mostly black, T-I to IV with apical pale fasciae, male F-III-IV swollen beneath, female pygidial plate bright coppery; Texas to Arizona, Central America *chrysoceerus* Rohwer
- Hindtibia all or mostly red, T-I to IV various, male F-III-IV cylindrical, female pygidial plate various 20
- 20. Female pygidial plate bright coppery, hindfemur nearly all red in both sexes, T-I to III only with pale tergal fasciae; s. Florida, especially Florida Keys *seminole* Banks
- Female pygidial plate dark coppery brown, female with pale tergal fasciae on T-I to III, but male on T-I-IV, hindfemur mostly black (typical) or mostly red (var.); widespread and common in U.S., Mexico *distinctus* F. Smith
- 21. Female hindtibia with posterior row of spines stout and peglike, especially basad; male with short and apically setose projection from forecoxa, male forefemur with subbasal ventral depression (*abdominalis* group) 22
- Female hindtibia with mostly slender spines, not peglike; male without a forecoxal projec-

- tion or subbasal forefemoral depression (*pepticus* group) 31
- 22. T-V in female and T-V-VI in male with much silvery or off-silvery pubescence, female pygidial plate light golden, male dististyle narrow and fingerlike; U.S. widespread, Mexico *obductus* W. Fox
 - T-V in female and T-VI in male with dark pubescence, female pygidial plate and male dististyle various 23
- 23. Metapleural flange expanded under hindwing in basalar area, female with T-I-II red or black, female pygidial plate bright coppery, both sexes with pale setal fasciae on T-I to IV, male dististyle sharply pointed and without much long setae; e. U.S., Central America *intermedius* (Viereck)
 - Metapleural flange not expanded in basalar area, other characters various 24
- 24. Females, 6 visible terga, some of which may be red; 10 flagellomeres 25
 - Males, 7 visible terga, all with black ground color; 11 flagellomeres 28
- 25. T-I to III only with pale setal fasciae 26
 - T-I to IV with pale setal fasciae 27
- 26. T-I to III red, pygidial plate golden brown; U.S., widespread but not common *parvus* W. Fox
 - T-I to III black, pygidial plate dark; widespread in U.S., Mexico, common *chrysopyga obscurus* Cresson
- 27. Pygidial plate light brown toward apex, more golden toward base, a little whitish basolaterally; T-I to III red; U.S. east of Pacific Coast states, Mexico *abdominalis* (Say)
 - Pygidial plate rather evenly bright coppery, T-I to VI red; w. U.S., Texas to Arizona, Mexico *birkmanni* Rohwer
- 28. Mandible notch on lower edge a small "v," not flanked by basal knob *chrysopyga obscurus* Cresson
 - Mandible notch on lower edge large, flanked by basal knob 29
- 29. T-I to III only pale setal fasciae, no anterolateral scutal patch of silvery reflective pubescence *parvus* W. Fox
 - T-I to IV with pale setal fasciae, scutum with anterolateral patch of silvery reflective pubescence 30
- 30. Dististyle moderately stout, with many erect bristles, relatively common species, mostly 9-10 mm long *abdominalis* (Say)
 - Dististyle broad medially, narrowed toward apex, less bristly, uncommon species, mostly 6-7 mm long *birkmanni* Rohwer
- 31. T-V in female and T-VI in male with silvery or off-silvery pubescence, female pygidial plate light coppery, scutum with little (if any) bright reflective pubescence anterolaterally; male hindfemur sometimes with a few erect hairlike setae ventrobasad, male F tapering gradually apicad (Fig. 7); Kansas, Oklahoma, west to Oregon, California *sayi* Banks
 - T-V in female and T-VI in male black, scutal pubescence various, female pygidial plate various, male hindfemur rarely with any long hairlike setae ventrobasad, male F at least slightly irregular apicad 32
- 32. Female pygidial plate silvery at base, grading to light golden apicad, male unknown, Texas *cressoni* Banks
 - Female pygidial plate coppery to dark coppery 33
- 33. Females, 6 external terga; 10 flagellomeres 34
 - Males, 7 external terga, 11 flagellomeres 36
- 34. Scutum with much anteromedian reflective pubescence (see notes in front of key) *pepticus* (Say), *fulviventris* Cresson, *scullemi* R. Bohart
 - Scutum with little, if any, anteromedian reflective pubescence 35
- 35. Terga all dark *pennsylvanicus* Banks
 - T-I to III mostly red (see notes in front of key) *californicus* R. Bohart, *nevadensis* R. Bohart, *spatulatus* W. Fox
- 36. F-IX distinctly broader than X-XI (Fig. 5) 37
 - F-IX not unusually enlarged as compared with X-XI (Figs. 4, 6) 39
- 37. Dististyle slender (Fig. 14); U.S. west to Arizona and s. California, Baja California *pepticus* (Say)
 - Dististyle stout, bladelike (Figs. 12, 13) 38
- 38. Scutum anteriorly with considerable reflective pubescence, T-I-II usually red, T-III often dark; Illinois west to Utah and Arizona, Mexico *fulviventris* Cresson
 - Scutum anteriorly with little, if any, reflective pubescence, T-III red; California, Oregon, Idaho *californicus* R. Bohart
- 39. F-VIII-IX-X somewhat enlarged (Fig. 4), T-I to II usually red but T-III dark, scutum without unusual reflective pubescence, dististyle slender (Fig. 16); Texas to Wyoming, west to California and Oregon *spatulatus* W. Fox
 - F-VIII-IX-X not unusually enlarged, terga, scutum, dististyle various 40
- 40. Scutum with much median reflective pubescence; F-VIII slightly broader than IX-X (Fig. 6); gonostyle without a strong bristle tuft at inner angle, or series of strong bristles, dististyle moderately bladelike (Fig. 13); Texas and western states, especially Arizona and New Mexico *scullemi* R. Bohart
 - Scutum with little, if any, median reflective

- pubescence; F-VIII-IX slightly broader than X-XI; gonostyle with strong inner bristles, dististyle slender (Fig. 15) 41
41. T-I-II red; gonostyle with series of strong, subbasal, inwardly directed bristles (Fig. 15); mostly Nevada, but also s. Oregon, e. California, e. Washington, Utah, Idaho *nevadensis* R. Bohart
- T-I-II and following dark, gonostyle with tuft of subbasal inner bristles; e. U.S. west to Texas, Nebraska, Montana . . . *pennsylvanicus* Banks

***Tachytes desertus* R. Bohart,
NEW SPECIES**

Holotype male.—Length 9 mm. Black, marked with orange-red: mandible toward base, tegula, post-tegula partly, foretibia, midtibia partly, tarsi, T-I-II and base of III; wing veins brown, membrane clear. Pubescence silvery, thick on face, overhanging clypeal midlobe, abundant on scutum, mesopleuron, foretibia, midtibia; forming apical bands on T-I to IV, a little such on V; pygidial setae fine, thick, silvery; hindfemur without long erect hairlike setae ventrally. Flagellomeres cylindrical, F-I 2.5 × longer than wide, about as long as F-II, 0.8 × LID; clypeus with median subapical transverse ridge creating a short punctate lip; genitalia with gonostyle broad, densely white setose beneath, apically with long bristles (Fig. 18).

Female.—Length 13–16 mm. About as in male except: abdomen all red, notum and propodeum often red, legs mostly red including hindfemur, pygidium light golden, T-I to IV silvery banded. Clypeal transverse ridge and punctate lip as in male but more pronounced.

Male holotype, (U.C. Davis), Santa Elena Cyn., Big Bend National Park, Brewster Co., Texas, VIII-25-54 (R. M. Bohart). Paratypes: female, 9 males, Rio Grande Village, Big Bend Park, VI, VII, 1980 (A. Hook); 2 males, 3 females, topotypes, VII and VIII (R. Gardner, C. Kovacic, C. & P. Vaurie). Paratypes and other specimens will be distributed to major collections in the U.S.

I have also seen 85 males and 24 females (not paratypes) from the following: Utah (Delta, 6 mi w. Smithfield), New Mexico (12 mi s. Alamogordo, White Sands), Texas (Pecos, Riviera Beach in Kleberg Co.), Arizona (Gila Bend, Sentinel, Continental, Topock, Willcox, Yuma, Phoenix), Nevada (Moopa, Averton, Fallon & 30 mi ne., Sand Mt. in Churchill Co., Sandy, Hazen), California (Yermo, Buttonwillow, Taft, Death Valley, Warm Sulfur Springs in Inyo Co., 20 mi w. Blythe, Thermal, 29 Palms, Maricopa, Deep Springs in Inyo Co., Palo Verde, Olancho), Baja California, Mexico (Los Angeles Bay, Pond Island Bay).

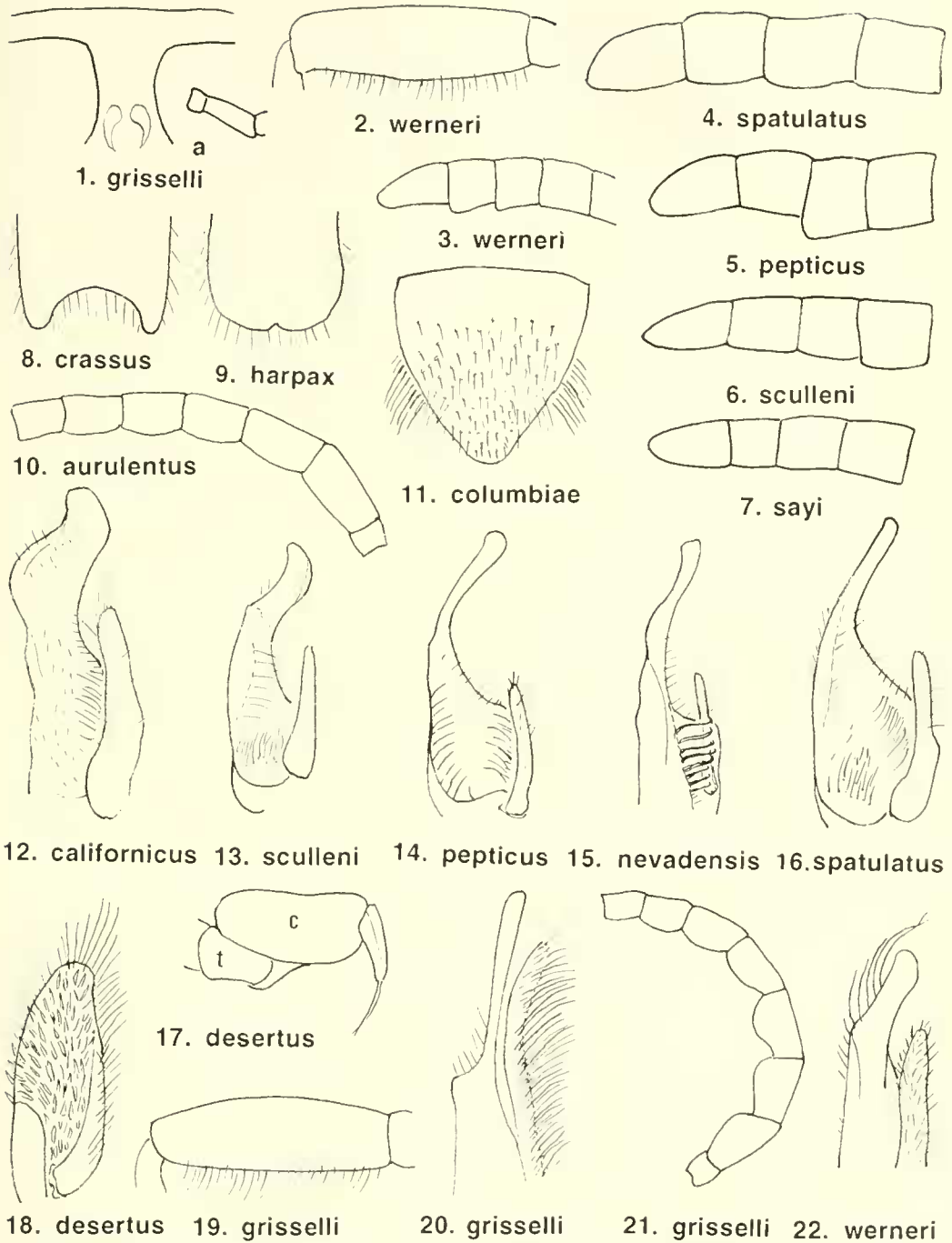
This desert denizen in the western U.S. is related to another member of its group, *amazonus*, which has an even broader distribution. As indicated in the key, the short male clypeus largely covered by silvery pubescence, and the red hindfemur of the female are distinguishing. Also, the male of *desertus* has no hairlike setae on S-III-V, which characterize *amazonus*. Most specimens of *desertus*, including all females, have T-I-II red but in males these may be occasionally dark.

The name is derived from the Latin adjective *desertus* = lonely or forsaken.

***Tachytes grisselli* R. Bohart,
NEW SPECIES**

Holotype male.—Length 13 mm. Brown to black marked with orange red: mandible except apex, scape almost entirely, tegula and wing veins, legs from middle of femora. Pubescence abundant, light creamy on face, scutum laterally and a sprinkling medially, metanotum, propodeum except dorsally; femora with much pale to golden pubescence, that beneath hindfemur long, pale, erect; T-I to VI with pale apical setal fasciae; pygidial setae off-silvery and somewhat separated. F-I to VI convex beneath, strongly so on II to IV (Fig. 21); LID subequal to F-I length (Fig. 1); male genitalia (Fig. 20).

Female.—Length 15–17 mm. About as in



Figs. 1-22. *Tachytes* species (all figures based on males). 1, dorsal view of vertex to show LID, Ia, pedicel and F-I. 2, hindfemur, profile. 3-7, F-VIII to F-XI. 8-9, S-VIII, ventral. 10, pedicel and F-I to F-VI, lateral. 11, T-VII. 12-16, gonostyle and volsella, right side, ventral. 17, coxa (c) and trochanter (t) of foreleg, ventral. 18, 20, 22, gonostyle and volsella, right side, ventral. 19, hindfemur, profile. 21, pedicel and F-I to F-VI, lateral. Drawings comparative, not to scale.

male. Tergal bands sometimes more golden; pygidial setae nearly black, edges of plate plainly turned up, leaving a smooth margin all around.

Male holotype (U.C. Davis), Gainesville, Alachua Co., Florida, IX-2-73 (E. E. Grissell). Paratypes, 9 males, 14 females, topotypes (E. E. Grissell, H. V. Weems, B. Saffer, G. B. Fairchild), all taken in VIII-IX. Other paratypes from Florida: 4 males, female, 9 mi ssw. Ocala, Marion Co., IX-X-1975 (J. Wiley); 6 males, 2 females, Archbold Station, Highlands Co., VII-X (R. M. Bohart, T. A. Webber, H. V. Weems); 2 males, 3 females, Orange Springs, Putnam Co., IX-X, 1975 (J. Wiley); 3 males, near Sebring Airport, Highlands Co. (H. V. Weems); male, near Holt, Okaloosa Co., VII-31-78 (L. A. Stange).

This species is in the *aurulentus* group as indicated in the key. It resembles *exornatus* and *aurulentus*, from both of which it differs by the strongly convex F-II to IV in the male (Fig. 21), the narrower LID in both sexes, and the definitely margined pygidial plate of the female. The dark female pygidium additionally separates *grisselli* from *exornatus*. Among the specimens examined no significant variation beyond slight size differences has been observed.

The species is named for the collector of the holotype, my friend and eminent chalcidologist, Eric Grissell.

Tachytes weneri R. Bohart,
NEW SPECIES

Holotype male.—Length 11 mm. Black; tegula partly, wing veins brown; tarsomere V reddish. Pubescence very light golden to off-silvery, thick and reflective on face, laterally and anteromedially on scutum, thick on mesopleuron, propodeum lateroposteriorly, T-I to IV in posterior bands, thick and fine on propodeum; hindfemur with many erect hairlike setae over its whole length ventrally (Fig. 2); S-VIII with abundant erect pubescence. F-I longer than II and about $0.7\times$ LID; F-X slightly wider than F-IX

which is slightly wider than F-VIII (Fig. 3); male genitalia (Fig. 22).

Female.—Length 13 mm. (Madera Canyon specimen). About as in male except: pubescence more silvery, more pronounced on scutum and mesopleuron, erect hairlike setae more sparse on hindfemur ventrally; pygidial plate with close, fine, coppery setae.

Male holotype (U.C. Davis), Madera Canyon, Pima Co., Arizona VIII-16-79 (R. M. Bohart). Paratypes, 9 male topotypes, VIII (R. M. Bohart, A. J. Gilbert, N. J. Smith, R. W. Brooks); 5 males, Molino Basin, Santa Catalina Mts., Arizona, VIII-15-54 (R. M. Bohart); 9 males, Sycamore Canyon near Ruby, Arizona, VIII-17-61 (F. Werner, J. Bequaert). Paratypes and other specimens will be distributed to major collections in the U.S.

Other specimens, not paratypes, 74 males, 18 females: Arizona (in or near Nogales, Patagonia, Peña Blanca, Skeleton Canyon, Portal, Apache, Bisbee, Lowell, Tucson, Baboquivari Mts.); Mexican States: Sonora, Veracruz, Chihuahua, Nayarit, Morelos, Jalisco, Oaxaca, San Luis Potosi, Chiapas.

Although close to *badius*, the terminal antennal and S-VIII characters distinguish the male of *weneri*. In the genitalia the gonostyle of *weneri* is slightly stouter (Fig. 22). Females of the 2 species are difficult to separate. However, it appears that the pygidial setae of *weneri* are finer and more coppery. Both species occur in Arizona and Mexico. Texas seems to harbour mainly *badius*. At least in males very little variation has been observed.

The name is in honor of Floyd Werner, my friend and one of the paratype collectors.

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